

(No Model.)

5 Sheets—Sheet 1.

J. A. SAFFORD.

Leather Splitting Machine.

No. 230,895.

Patented Aug. 10, 1880.

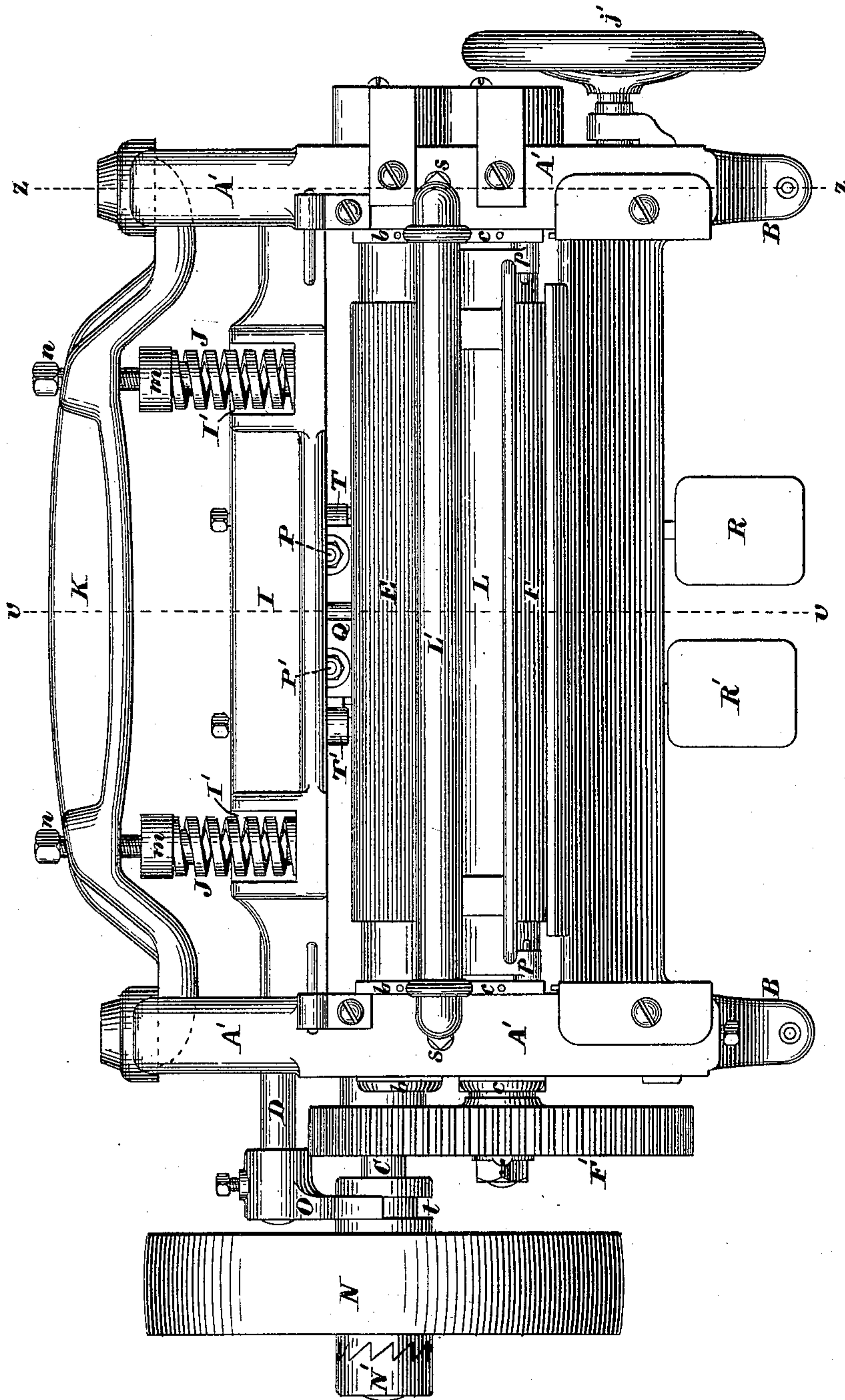


Fig. 1.

Witnesses:

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Walter C. Lombard.

Inventor:

Joseph A. Safford  
by N. C. Lombard  
Attorney.

(No Model.)

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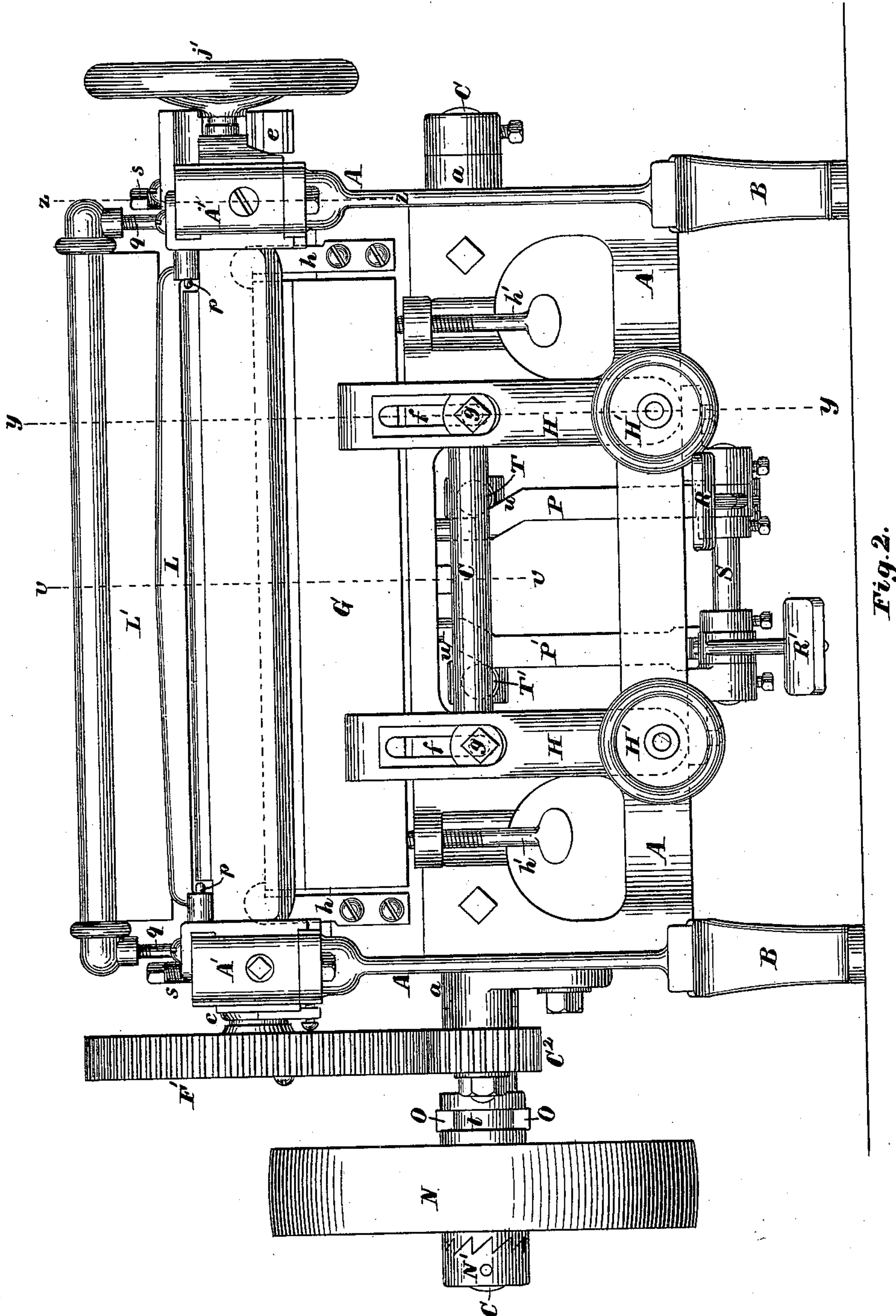


Fig. 2.

Witnesses:

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Inventor:

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(No Model.)

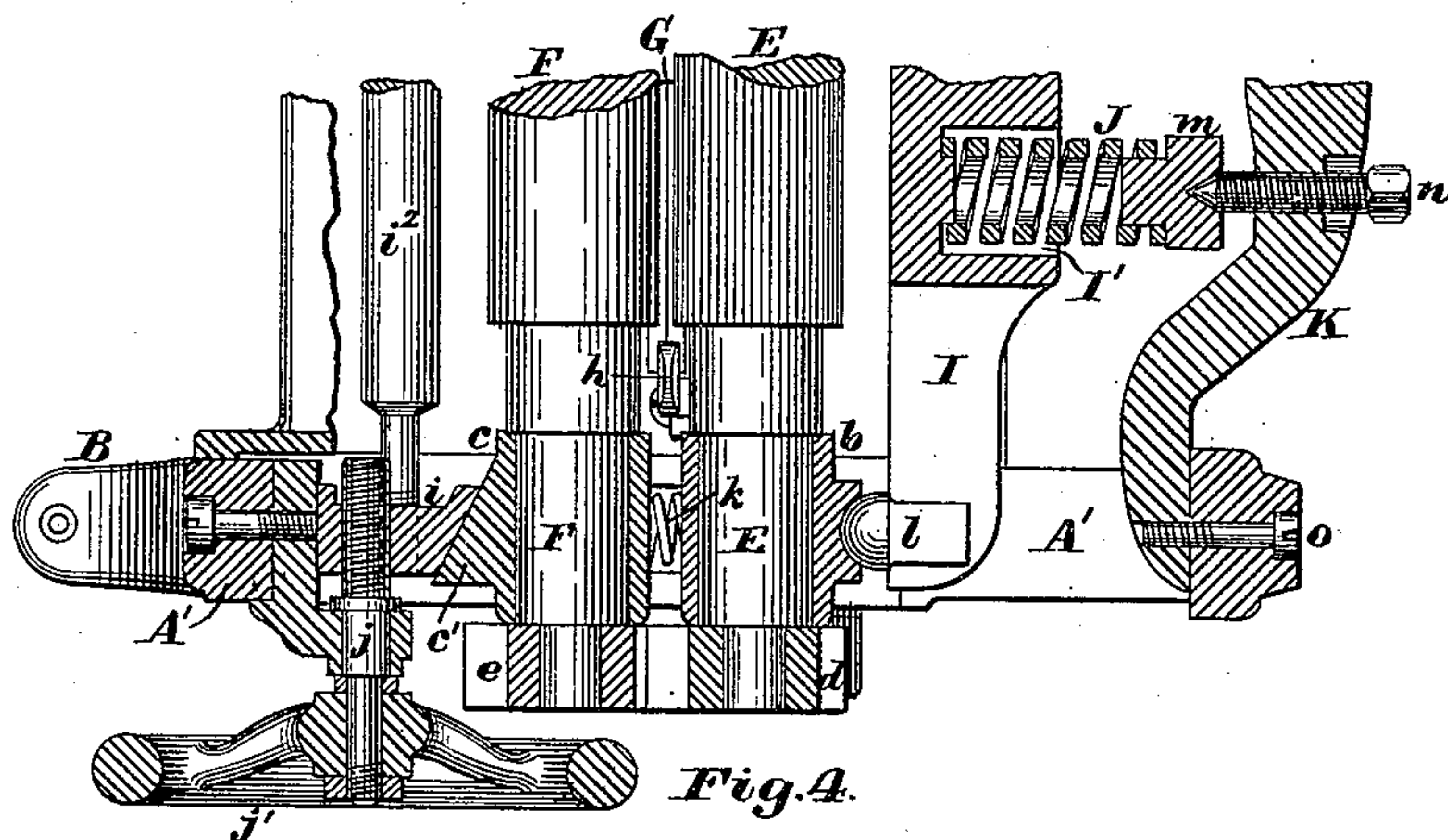
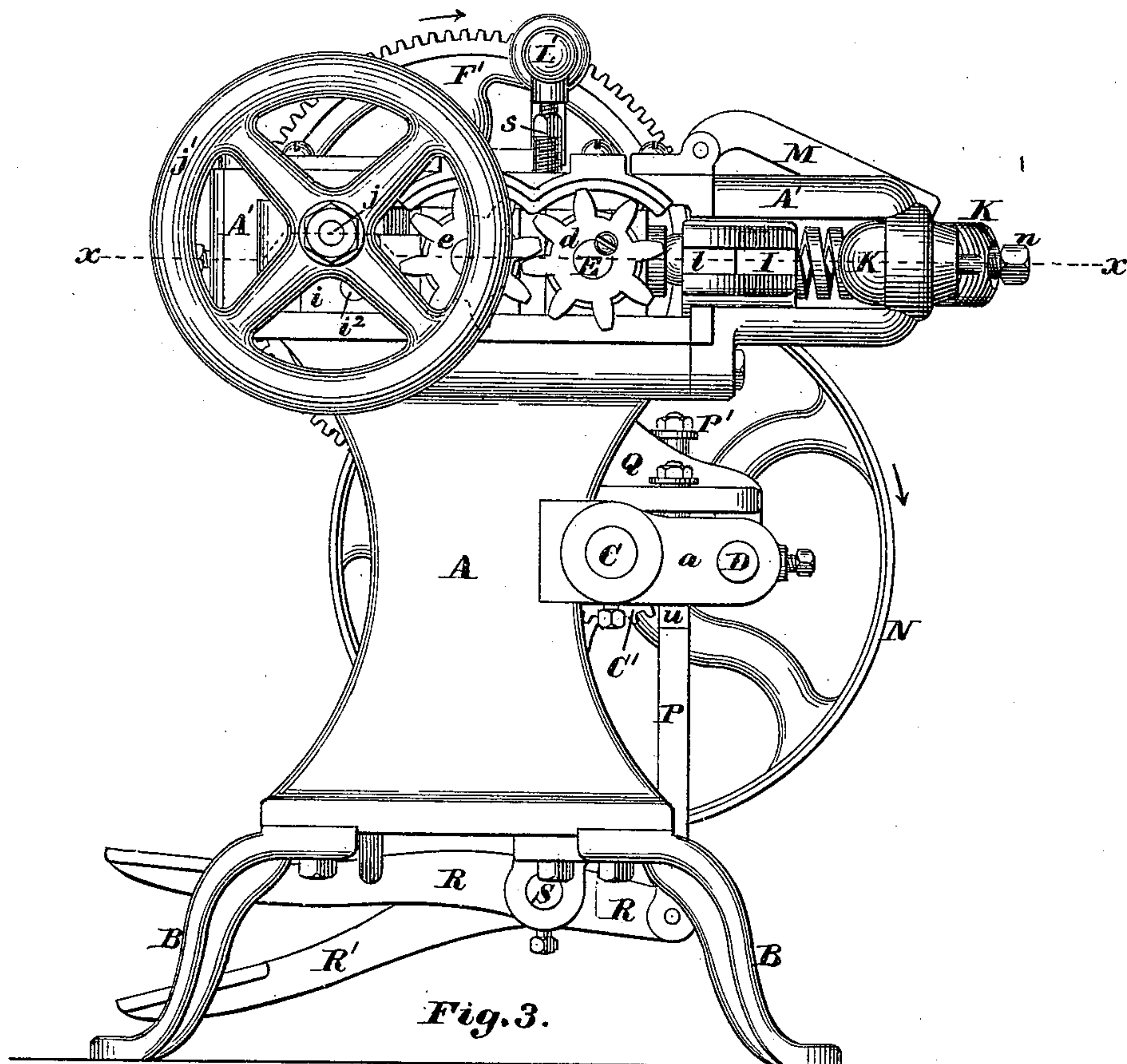
5 Sheets--Sheet 3.

J. A. SAFFORD.

## Leather Splitting Machine.

No. 230,895.

**Patented Aug. 10, 1880.**



***Witnesses:***

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(No Model.)

5 Sheets—Sheet 4.

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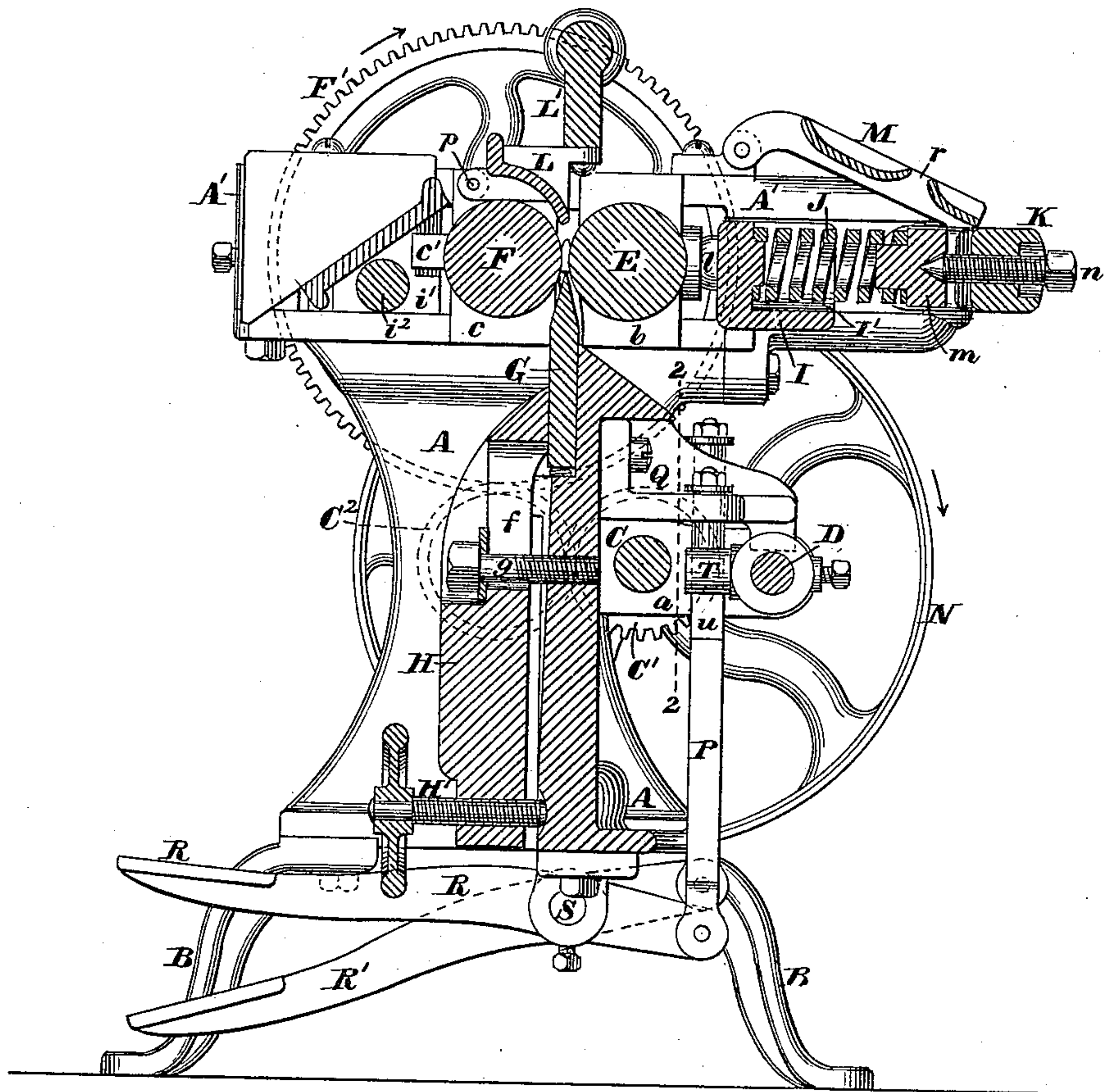


Fig. 5.

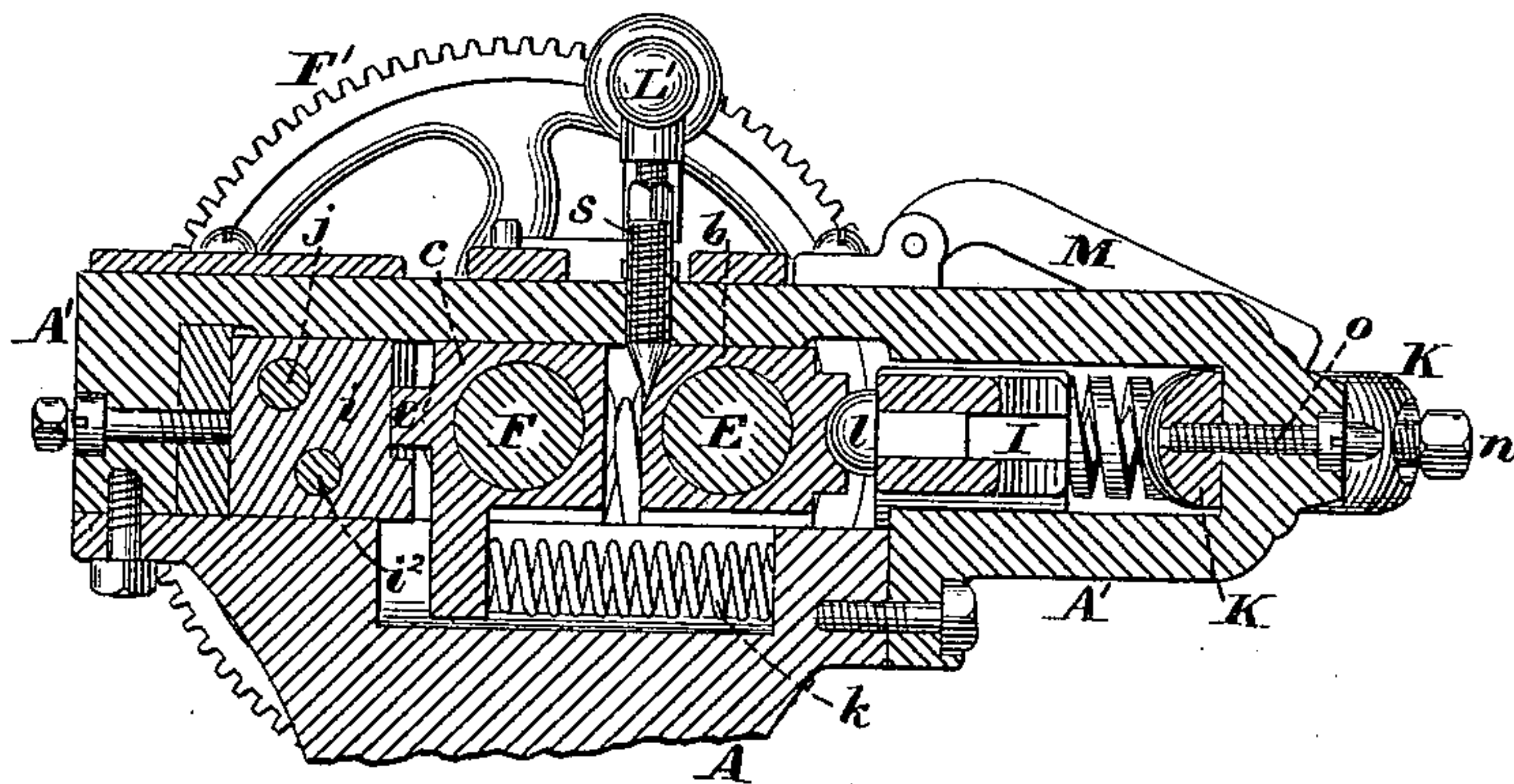


Fig. 6.

Witnesses:

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(No Model.)

5 Sheets—Sheet 5.

J. A. SAFFORD.  
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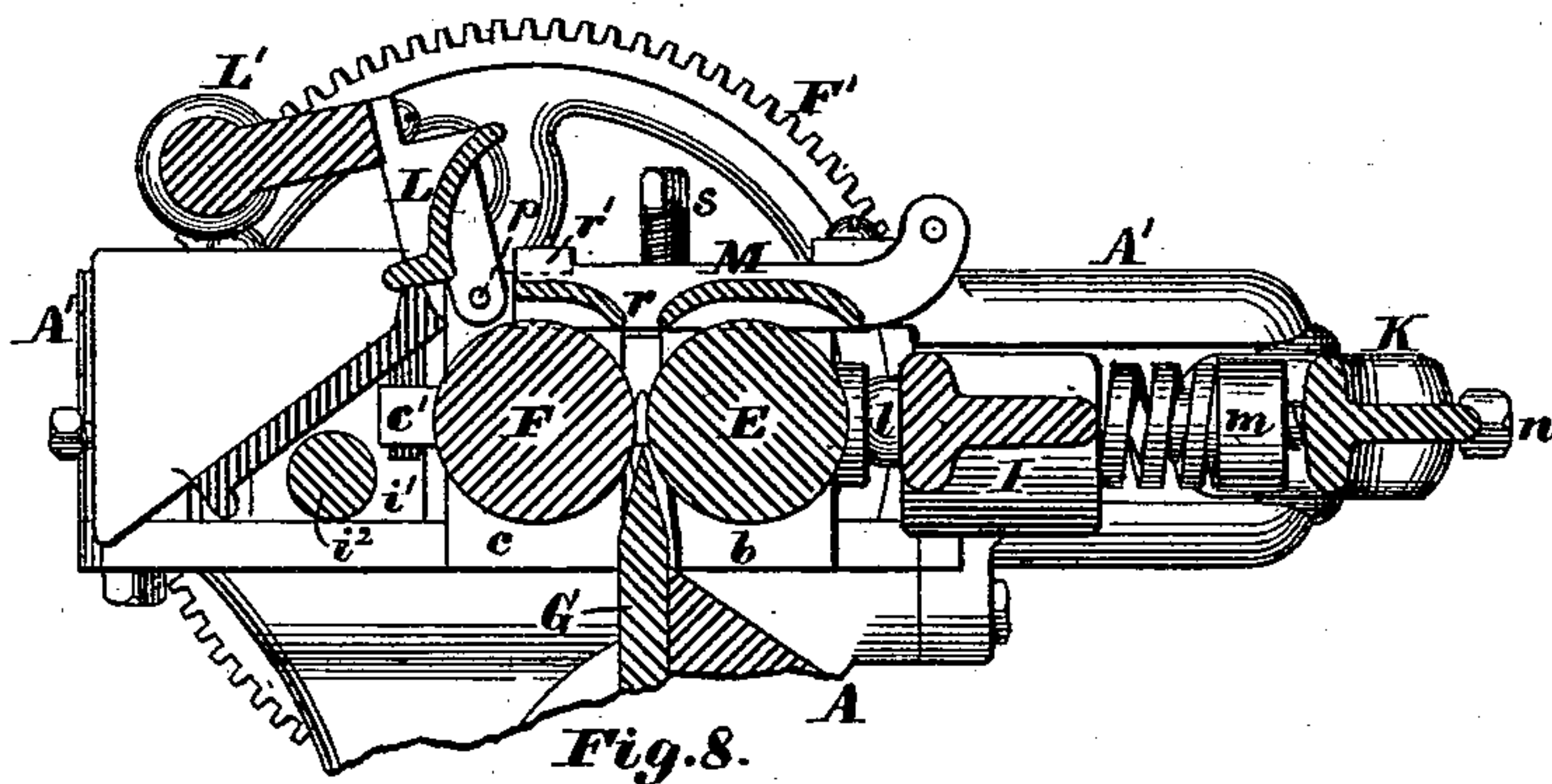


Fig. 8.

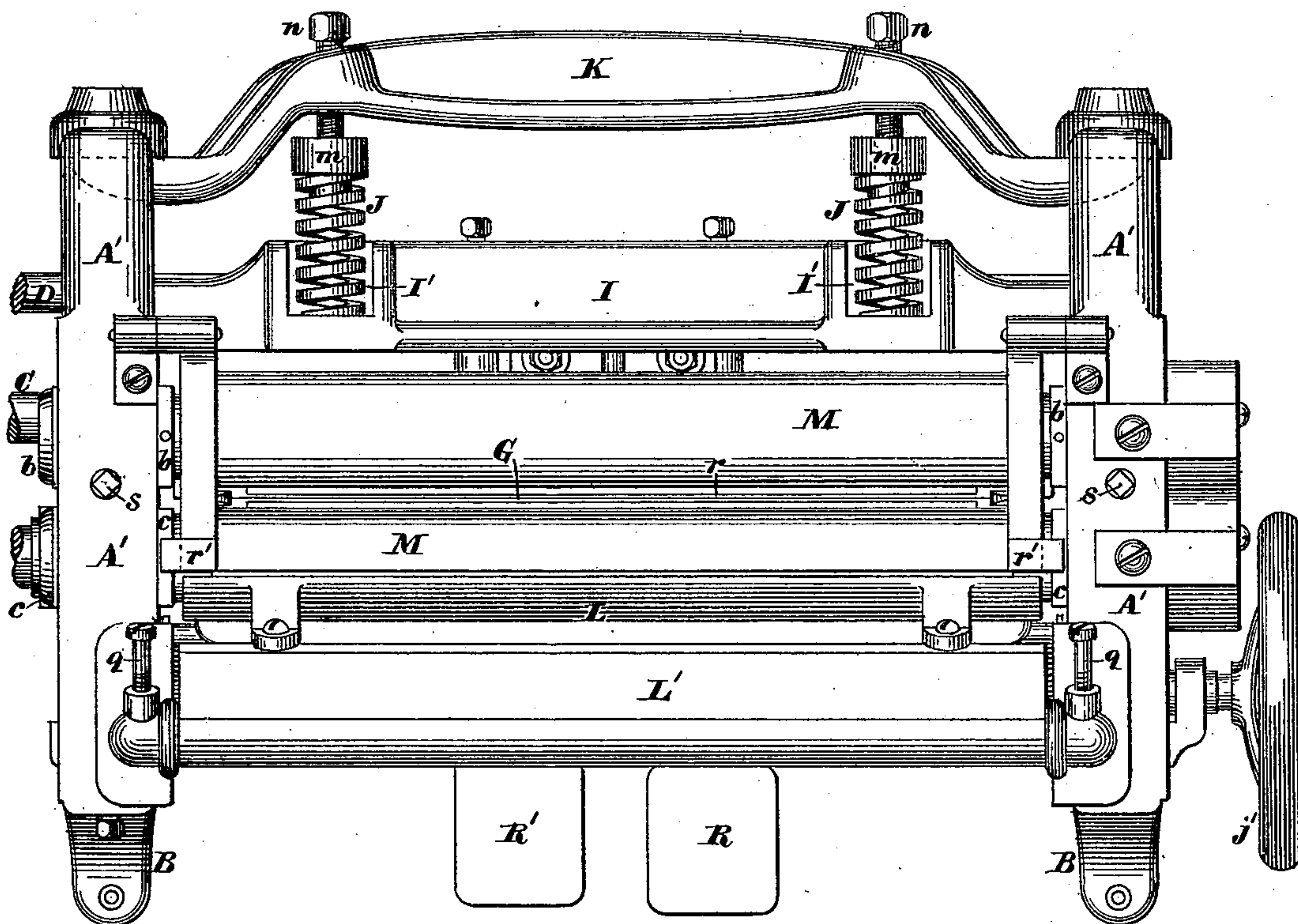


Fig. 7.

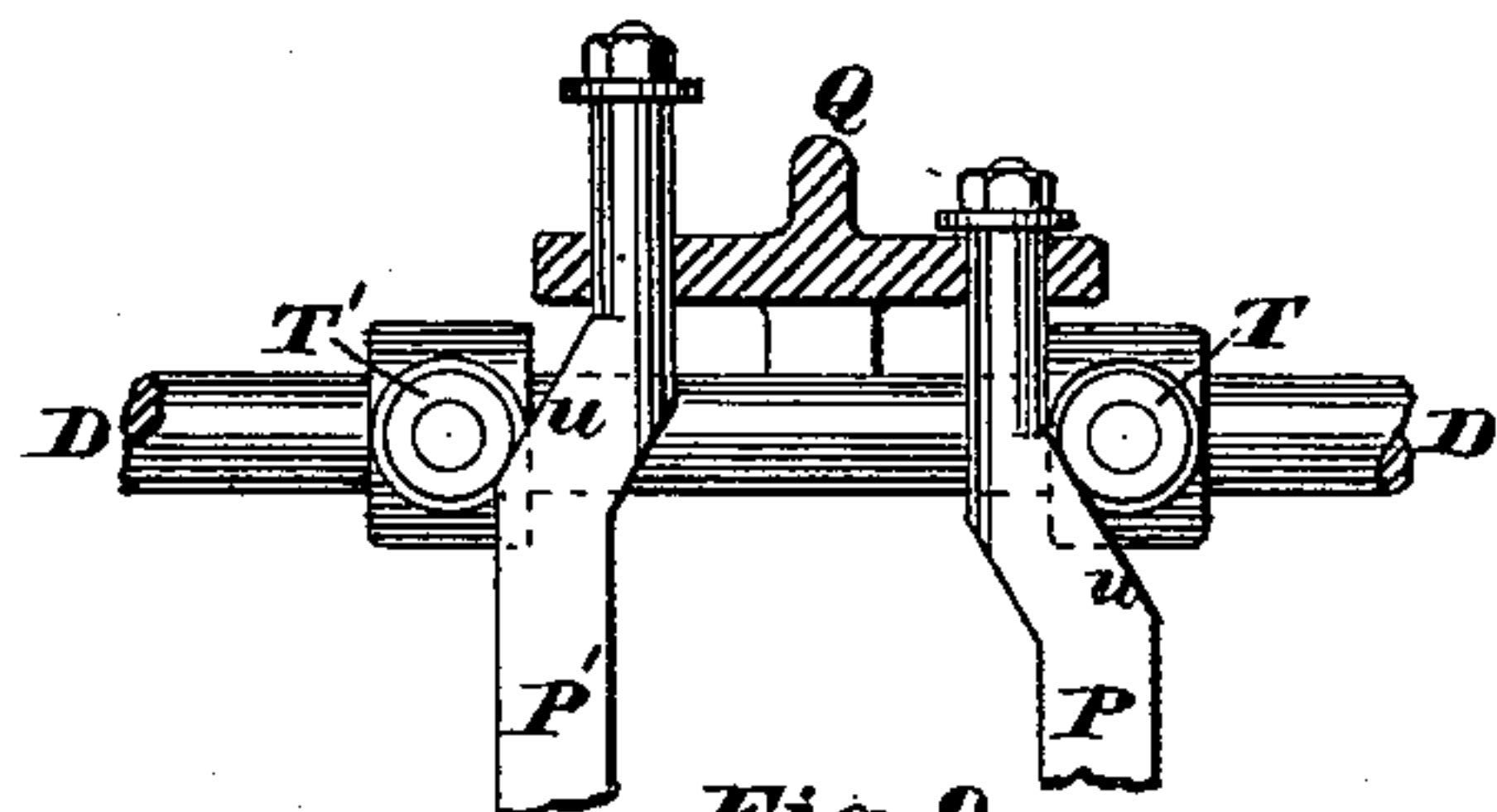


Fig. 9.

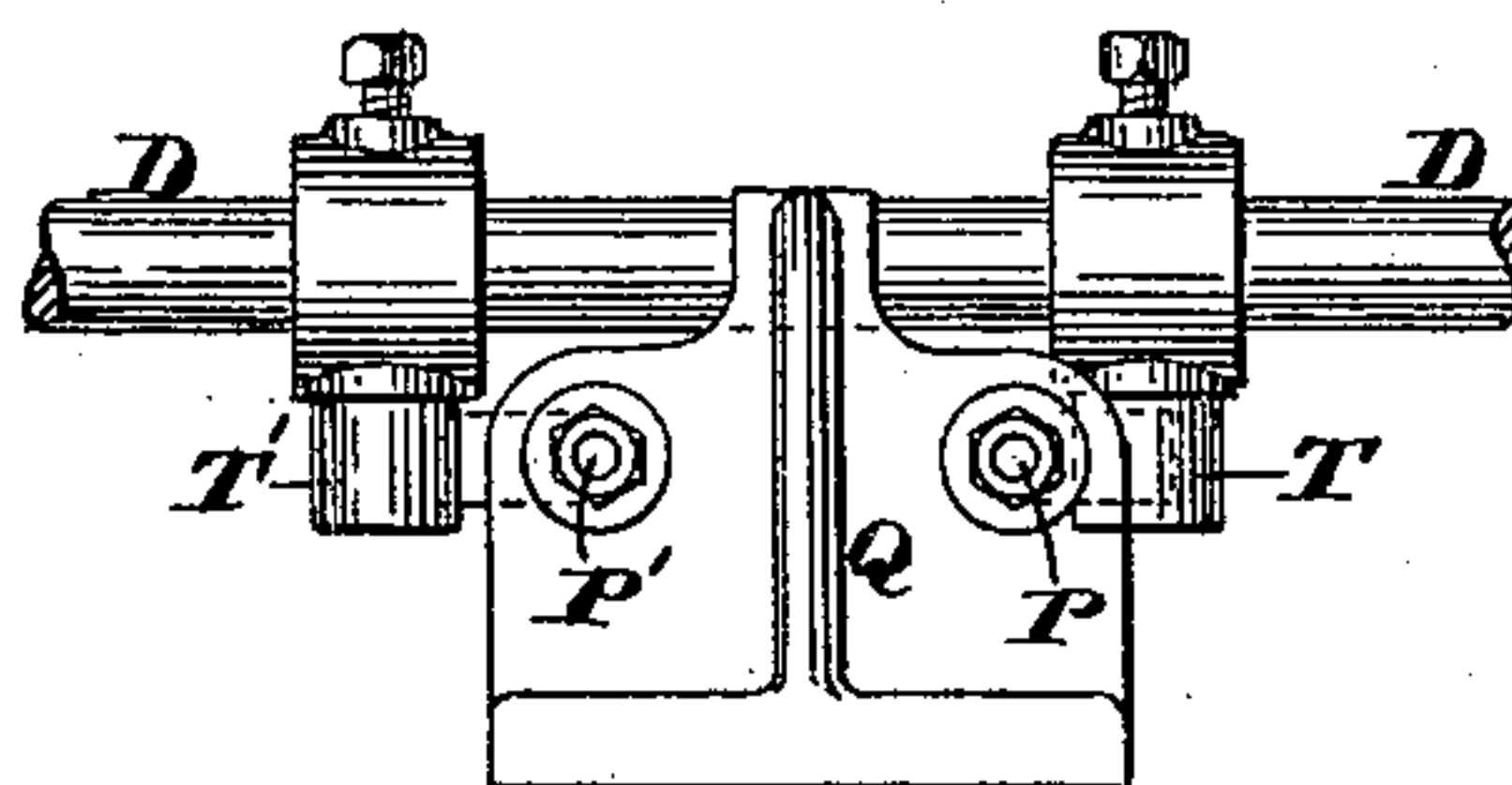


Fig. 10.

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Inventor:

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Attorney.



# UNITED STATES PATENT OFFICE.

JOSEPH A. SAFFORD, OF BOSTON, MASSACHUSETTS.

## LEATHER-SPLITTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 230,895, dated August 10, 1880.

Application filed June 16, 1880. (No model.)

*To all whom it may concern:*

Be it known that I, JOSEPH A. SAFFORD, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Leather-Splitting Machines, of which the following, taken in connection with the accompanying drawings, is a specification.

My present invention relates to a machine for splitting upper-leather and evening soles or sole-leather, and is an improvement upon the invention described in Letters Patent No. 211,187, granted to me January 7, 1879; and it consists, first, in a novel means for securing the knife in position, whereby it may be more expeditiously applied and removed than when secured in the old way.

It further consists in a novel arrangement and construction of devices for imparting pressure to the material being split or evened, which will be best understood by reference to the description of the drawings.

It further consists in a novel adjustable stop or stops for limiting the movement of the pressure-roll toward the knife and gage roll, as will be hereinafter described.

It further consists in the combination, with the pressure and gage rolls and knife of a leather-splitting machine, of a hand-guard covering or partially covering said rolls, and provided with a longitudinal slot directly over or in front of the throat between said rolls, through which slot the material may be fed to said rolls and knife without any possible chance of the operator's fingers being drawn between the rolls or into contact with the knife.

It further consists of a leather-splitting machine provided with a pivoted and weighted pressure-bar adapted to wrap the material partially around and press it upon the gage-roll when in use, and to be turned away from said roll, and also provided with a slotted hand-guard pivoted to the frame of the machine upon the side of the rolls opposite to the pressure-bar, and adapted to be placed over the rolls when the pressure-bar is turned away, or to be turned back away from the rolls to permit the pressure-bar to be brought into a position for use, whereby the machine is adapted to splitting the thinnest upper-leather,

using the pressure-bar, or to evening soles and sole-leather, using the guard-plate instead of the pressure-bar, thus adapting a single machine to do two kinds of work for which generally separate machines are used.

It further consists in a novel shipping device for controlling the operation of the machine, which will be readily understood by reference to the description of the drawings hereinafter contained.

Figure 1 of the drawings is a plan of a machine embodying my invention, with the hand-guard plate removed. Fig. 2 is a front elevation. Fig. 3 is an elevation of the right-hand end of the machine. Fig. 4 is a partial horizontal section on line *x x* on Fig. 3. Fig. 5 is a vertical transverse section on line *y y* on Fig. 2. Fig. 6 is a partial vertical section on line *z z* on Figs. 1 and 2.

In the views above described the machine is shown in condition for splitting upper-leather.

Figs. 7 and 8 are respectively a plan and a partial vertical section on line *v v* on Figs. 1 and 2, showing the machine in condition for evening soles or sole-leather. Fig. 9 is a partial section on line 2 2 on Fig. 5, showing the wedges or cams for moving the shipper-rod in elevation; and Fig. 10 is a plan of the parts shown in Fig. 9.

A is the main frame or bed of the machine, supported upon the legs B B, and having mounted in suitable bearings *a a*, formed thereon or secured thereto, the driving-shaft C and shipper-rod D.

E is the pressure or feed roll, and F the gage-roll, mounted respectively in the sliding boxes *b* and *c*, fitted to and adjustable horizontally in the housings A', said rolls being geared together at their right-hand ends by the spur-gears *d* and *e*, so as to compel them to rotate in unison and in opposite directions.

The gage-roll F has firmly secured upon the opposite end of its shaft the large gear-wheel F', to which a rotary motion may be imparted by revolving the driving-shaft C, said driving-shaft having secured thereon the pinion C', which meshes into an intermediate pinion, C<sup>2</sup>, which, in turn, meshes into and imparts motion to the gear-wheel F', and through it to the roll F.

G is the knife, fitted to a suitable seat or



bearing on the bed A in a vertical position, with its cutting-edge uppermost, and secured thereon by one or more clamping-levers, H, each provided with a longitudinal slot, *f*, through which the fulcrum-bolt *g* passes and is screwed into the bed A, and with a clamping-screw, H', fitted to work in a female thread formed in the lower end of the clamping-lever H, with its inner end pressing against the bed A in an obvious manner.

The position of the knife-edge relative to the axes of the feed and gage rolls is determined by the hook-shaped gages *h h* and the set-screws *h' h'*, as described in my patent before cited.

The gage-roll F is adjusted toward or from the knife to determine the thickness of the evened portion of the split stock by means of two wedges, *i* and *i'*, connected together by the rod *i<sup>2</sup>*, and the adjusting-screw *j*, provided with the hand-wheel *j'*, the wedges *i* and *i'* acting against the inclined projections *c' c'* on the boxes *c c* in such a manner that an end-wise movement of the wedges *i* and *i'* toward the right hand will cause the gage-roll F to be moved bodily toward the knife, and when the wedges are moved in the opposite direction the springs *k*, reacting against the boxes *c c*, move the roll F away from the knife, all as described in my patent before cited.

The boxes *b b* have formed in their rear sides recesses or notches to receive the bearing-heads of the studs *l l*, the flattened shanks of which are fitted to the slotted ends of the bar I, which extends across the machine in the rear of and parallel to the roll E, which has its bearings in the boxes *b b*.

The bar I is provided with two recesses, I', to receive one end of the springs J J, the opposite ends of which are supported by the shouldered hubs *m m*, which, in turn, are supported by the conical ends of the set-screws *n n*, which work in nuts or female threads formed in the yoke K, and serve to regulate the tension of the springs J J, and thereby control the pressure of the feed-roll E.

The yoke K extends across the back side of the machine, and is secured at its ends to the housings A' by means of screw *o*, as shown in Fig. 4.

By this arrangement of the feed or pressure roll and the devices for controlling the pressure the roll readily adjusts itself to inequalities or variations in the thickness of the stock being acted upon with an equalized pressure, thereby rendering it possible to feed uneven, irregular, or soft and hard stock with equal facility.

L is a weighted pressure-bar, pivoted at *p* to the boxes *c c*, so as to move therewith, and extending back over the gage-roll F, and curved downward around said roll, but eccentric thereto, so that its rear and lower edge will press upon the stock being fed between it and the roll F in such a manner that any wrinkles contained in the stock will be smoothed out by the action of said bar thereon and the fact

that the stock is partially wrapped around the roll F before it reaches the knife.

The pressure-bar L is weighted by the supplementary bar L', in each end of which is set the adjustable screw-stop *q*, by means of which the distance of the rear edge of the bar L from the roll F may be gaged. This pressure-bar L is used when thin flexible stock is to be split; but when soles or pieces of sole-leather are to be shaved to an even thickness or split the bar L is turned into the position shown in Figs. 7 and 8, and the soles, &c., are fed between the rolls and to the action of the knife in substantially a vertical position, or without bending it around either roll. In doing this there is danger of the operator's fingers being drawn between the rolls and injured, to avoid which the guard-plate M, provided with the longitudinal slot *r*, is pivoted to the rear portions of the housings A', and supported at its front edge by the ears *r' r'*, which rest upon the boxes *c c* in such a position that the soles or pieces of sole-leather may be presented to the action of the rolls and the knife in a vertical position by passing them through the slot *r*.

When it is desired to use the machine for splitting thin upper-leather the guard-plate M is turned back away from the rolls and the weighted pressure-bar L L' is turned back into position over the roll F, as shown in Fig. 5.

The movement of the feed-roll E toward the knife is limited by the conical pointed stop-screws *s s*, set in the housings A' and adapted to be adjusted vertically therein, with their conical portions engaging with correspondingly-inclined surfaces on the front sides of the boxes *b b*, as shown in Fig. 6.

N is the driving-pulley, mounted loosely upon the shaft C, and provided with clutch-teeth to engage with corresponding teeth on the collar N', rigidly secured upon the shaft C, and with a groove, *t*, to receive the shipper-fork O, mounted upon the shipper-rod D, as a means of moving the pulley N on the shaft C to couple it with or disengage it from said shaft.

P and P' are two cam plates or bars arranged in vertical positions just in front of the shipper-rod D, and guided at their upper ends in bearings in the stand Q, and connected at their lower ends with the rear ends of the treadles R and R', respectively, mounted loosely upon a stationary rod, S, in such a manner that either treadle may be moved around said rod independently of the other.

Each of the cam-plates P and P' is provided with an inclined or cam-shaped surface, *u*, which engages with a truck, T or T', mounted on a stud attached to and projecting at right angles from the shipper-rod D in such a manner that when the front end of the treadle R is depressed and the cam-plate P is moved upward its inclined surface *u*, acting upon the truck T, forces the shipper-rod D and pulley N to the right, uncoupling the pulley from the shaft C and stopping the machine, the same motion of the shipper-rod causing the truck



T' to force the cam-plate P' downward, and thereby raise the front end of the treadle R'.

If, now, the foot be placed upon the treadle R' to depress it, the reverse action takes place and the machine is set in motion.

By the use of this shipping device the driving-pulley is held securely in either position against any tendency of the driving-belt to move it along the shaft C in either direction, as is often the case when the shipper-rod is not locked.

What I claim as new, and desire to secure by Letters Patent of the United States, is—

1. in a leather-splitting machine, the combination of the knife G, a stationary clamping-jaw or supporting-bed, and one or more levers, each pivoted to said stationary clamping-jaw by a fulcrum-bolt in a position to bear at one end upon the surface of the knife, and provided at its other end with a set-screw, all arranged and adapted to operate substantially as and for the purposes described.

2. The clamp-lever H, provided with the slot *f* and clamping-screw H', in combination with the knife-supporting bed A and the fulcrum-bolt *g*, all arranged and operating as a means of securing the knife substantially as described.

3. The combination of the feed-roll E, bar I, springs J J, set-screws *n n*, and yoke K, all arranged and operating substantially as and for the purposes described.

4. The combination of the roll E, boxes *b b*, and the adjusting stop-screws *s s*, all arranged and operating substantially as described.

5. In combination with the rolls E and F

and the knife G, a hand-guard pivoted to the frame so as to cover said rolls, and provided with a slot through which the material may be fed to the rolls, substantially as and for the purposes described.

6. The combination of the rolls E and F, knife G, and the weighted pressure-bar L L', pivoted to and movable with the boxes *c c*, in which the roll F has its bearings, substantially as described.

7. A leather-splitting machine provided with a weighted pressure-bar for use in splitting thin leather, and adapted to wrap the material partially around and press it upon the gage-roll, and to be turned away from said roll when not desired for use, and with a pivoted hand-guard adapted to be placed in a position to cover said roll or to be turned back away therefrom, substantially as and for the purposes described.

8. The combination of the clutch-pulley N, shipper D O, the two cam-plates P P', treadles R and R', and trucks T and T', all arranged and adapted to operate substantially as and for the purposes described.

9. The combination of the feed-roll E, boxes *b b*, bearing-studs *l l*, the bar I, and mechanism for forcing the bar I and roll E toward the knife with a yielding pressure, substantially as described.

Executed at Boston, Massachusetts, this 14th day of June, A. D. 1880.

JOSEPH A. SAFFORD.

Witnesses:

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E. E. CHANDLER.